CURRENT LISTING OF CLAIMS:

Claims 1 - 48 (Cancelled).

49. (Currently Amended) A method for acquiring PET and CT images, comprising the steps of:

placing a patient on a patient support;

moving said patient support to position the patient within a CT scanner patient gantry such that a selected region of said patient to be imaged is within a field of view of a CT scanner associated with said CT scanner patient gantry;

acquiring CT image data of the selected region of the patient;

moving said patient support to position the patient within a PET scanner patient gantry such that said selected region to be imaged is within a field of view of a PET scanner associated with said PET scanner patient gantry;

acquiring PET image data of the selected region of the patient;

correcting said CT image data for artifacts due to field of view truncation, correcting said CT image data further comprising:

obtaining non-corrected PET image data;

determining a boundary of a truncated portion of the selected region of the patient using a non-corrected PET image reconstructed from said non-corrected PET image data;

estimating a volume within said boundary of the truncated portion of the selected region using an average linear attenuation coefficient for the truncated portion of the selected region; and

adding said volume to said CT image data;

reconstructing a CT image from said corrected CT image data; and

reconstructing a PET image from said acquired PET image data and using said ~~acquired~~ corrected CT image data in the reconstruction of said PET image, to achieve a reconstructed PET image.

50. (Previously presented) The method of claim 49, further comprising the step of continuously moving said patient support in an axial direction within said PET scanner

patient gantry, whereby normalization effects between individual detector rings of said PET scanner are eliminated.

51. (Previously presented) The method of claim 49 wherein said CT scanner patient gantry is separate from and fixed relative to said PET scanner patient gantry, said patient support being movable between said CT scanner patient gantry and said PET scanner patient gantry, whereby said step of acquiring CT image data of the selected region of the patient is accomplished within said CT scanner patient gantry, and whereby said step of acquiring PET image data of the selected region of the patient is accomplished within said PET scanner patient gantry.

52. (Previously presented) The method of claim 49 wherein said CT scanner patient gantry is separate from said PET scanner patient gantry, wherein at least one of said CT scanner and said PET scanner is movable with respect the other, and wherein said patient support is movable between said CT scanner patient gantry and said PET scanner patient gantry, whereby said step of acquiring CT image data of the selected region of the patient is accomplished within said CT scanner patient gantry, and whereby said step of acquiring PET image data of the selected region of the patient is accomplished within said PET scanner patient gantry.

53. (Original) The method of claim 52 wherein said step of moving said patient support to position the patient within said CT scanner patient gantry is accomplished by moving said CT scanner to receive said patient bed within said CT scanner patient gantry.

54. (Original) The method of claim 52 wherein said step of moving said patient support to position the patient within said PET scanner patient gantry is accomplished by moving said PET scanner to receive said patient bed within said PET scanner patient gantry.

Claims 55-57 (Cancelled).

58. (Previously presented) The method of claim 49 further including the step of displaying at least one of said reconstructed CT image and said reconstructed PET image.

59. (Previously presented) The method of claim 49 further including the step of fusing said reconstructed CT image and said reconstructed PET image to achieve a fused PET/CT image.

60. (Currently Amended) The method of claim [[49]] 52, further comprising the step of continuously moving said patient support in an axial direction within said PET scanner patient gantry, whereby normalization effects between individual detector rings of said PET scanner are eliminated.

61. (Currently Amended) The method of claim [[49]] 52 wherein said CT scanner patient gantry is separate from and fixed relative to said PET scanner patient gantry, said patient support being movable between said CT scanner patient gantry and said PET scanner patient gantry, whereby said step of acquiring CT image data of the selected region of the patient is accomplished within said CT scanner patient gantry, and whereby said step of acquiring PET image data of the selected region of the patient is accomplished within said PET scanner patient gantry.

Claims 62 - 64 (Cancelled).

65. (Previously Presented) A method for acquiring PET and CT images as set forth in claim 49, further comprising the step of:
generating attenuation correction factors for said PET image from said acquired CT image data and using said attenuation correction factors to reconstruct a corrected PET image.

Claims 66 - 67 (Cancelled).

68. (Original) The method of claim 65 wherein said step of generating attenuation correction factors from said reconstructed CT image is performed using the steps of:

estimating an attenuation image at 511 keV using a threshold to separate out a bone component of said reconstructed CT image; and

scaling said bone component using a first scaling factor and a non-bone component of said reconstructed CT image using a second scaling factor.

69. (Currently Amended) The method of claim 65 further including the step of displaying at least one of said reconstructed CT image and said ~~reconstructed~~ attenuation-corrected PET image.

70. (Currently Amended) The method of claim 65 further including the step of fusing said reconstructed CT image and said ~~reconstructed~~ attenuation-corrected PET image to achieve a fused PET/CT image.

71. (Previously presented) The method of claim 65, further comprising the step of continuously moving said patient support in an axial direction within said PET scanner patient gantry, whereby normalization effects between individual detector rings of said PET scanner are eliminated.

72. (Previously presented) The method of claim 65 wherein said CT scanner patient gantry is separate from and fixed relative to said PET scanner patient gantry, said patient support being movable between said CT scanner patient gantry and said PET scanner patient gantry, whereby said step of acquiring CT image data of the selected region of the patient is accomplished within said CT scanner patient gantry, and whereby said step of acquiring PET image data of the selected region of the patient is accomplished within said PET scanner patient gantry.

73. (Previously presented) The method of claim 65 wherein said CT scanner patient gantry is separate from said PET scanner patient gantry, wherein at least one of said

CT scanner and said PET scanner is movable with respect the other, and wherein said patient support is movable between said CT scanner patient gantry and said PET scanner patient gantry, whereby said step of acquiring CT image data of the selected region of the patient is accomplished within said CT scanner patient gantry, and whereby said step of acquiring PET image data of the selected region of the patient is accomplished within said PET scanner patient gantry.

74. (Original) The method of claim 73 wherein said step of moving said patient support to position the patient within said CT scanner patient gantry is accomplished by moving said CT scanner to receive said patient bed within said CT scanner patient gantry.

75. (Original) The method of claim 73 wherein said step of moving said patient support to position the patient within said PET scanner patient gantry is accomplished by moving said PET scanner to receive said patient bed within said PET scanner patient gantry.

Claims 76-90 (Cancelled).

91. (Previously presented) The method of claim 65 wherein said step of reconstructing said attenuation-corrected PET image is accomplished using a Fourier rebinning technique and then independently by an ordered-subset EM iterative reconstruction algorithm.

Claims 92-98 (Cancelled).

99. (Previously presented) A method for acquiring PET and CT images as set forth in claim 49, further comprising the step of:
correcting said PET image for scatter to achieve a scatter-corrected PET image.

Claims 100-145 (Cancelled).